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EXAMINER	
ANDREWS, LEON T	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/687,784	SINGH ET AL.	
	Examiner	Art Unit	
	Leon Andrews	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,13-19 and 21-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-19 and 21-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- Applicant's Amendment filed October 31, 2007 is acknowledged.
- **Claims 1** and **11** were amended.
- **Claims 12** and **20** were cancelled.
- **Claims 21-26** are new.

1. **Claims 1-11, 13-19 and 21-26** are rejected under 35 U.S.C. 102(e) as being anticipated by **Wong** (Pub. No.: US 2004/0264464 A1 using Provisional application No.: 60/482,759).

Regarding Claim 1, Wong discloses a multicast packet duplication system for multicast packets (Internet Protocol Multicast (IPMC) packet duplication covers tables required to implement the MMU and egress module, page 3, lines 2-4) containing at least multicast address data (multicast packet is replaced with source MAC address, page 3, lines 14-15), comprising:

an input port (Block Diagram, CPI ingress bus, page STN-2) configured to receive a packet (IPMC packet, page 5, line 21); and

a plurality of output ports (Block Diagram, CPE egress bus, page STN-2) configured to output the packet, wherein:

a number of duplications of the packet for each of the plurality of output ports is controlled by descriptors (IPMC Packet Replication, IPMC packet replication per VLAN at the egress done by two tables used for lookup, page STN-10, lines 1-8; IPMC Replication, Head_Pointer and the

Next_Pointer used as index to the LS table, step 5, STN-13) arranged in a linked-list table indexed (ECMP Support, L3 table, page STN-7) by a hashing function (IPMC Replication, MS_Vector, LS_Vector, 64-bit vector for specifying the MS and LS 6 bits of VLAN_ID and VLAN tag used as an index into the IP Replication table, pages STN-11 and STN-12, lines 1-12 and 7-8 respectively) applied to said multicast address data.

Regarding Claims 2 and 14, Wong discloses the packet duplication system and method (IPMC Replication steps, page STN-13), wherein: each of the number of duplications is coupled to a Virtual Local Area Network (VLAN) (IPM packet replication per VLAN, page STN-10, line 8).

Regarding Claims 3 and 13, Wong discloses the packet duplication system and method, wherein: an encoding format (ECMP Dest_Ip Search, step 7, STN-8) of the descriptors includes at least one of:

a contiguous range encoding (ECMP Dest_Ip Search, step 7, index points to the first entry of column of 8 entries in the L3 table, page STN-8);

a non-contiguous range encoding; and

a discrete encoding.

Regarding Claims 4 and 15, Wong discloses the packet duplication system and method, wherein: the descriptors arranged in the linked-list table include at least one shared descriptor (IPMC Replication, Head_Pointer and the Next_Pointer used as index to the LS table, step 5, STN-13).

Regarding Claim 5, Wong discloses the packet duplication system of claim 1, further comprising: a pointer table (ECMP Support, L3 Interface Table, page STN-7) having a width comprising a plurality of entries (column of 8 entries in the L3 table, ECMP Dest_Ip Search, step 7, page STN-8) coupled to the linked-list table.

Regarding Claim 6, Wong discloses the packet duplication system of claim 5, wherein: each of the plurality of entries (column of 8 entries in the L3 table, ECMP Dest_Ip Search, step 7, page STN-8) corresponds to one of the plurality of output ports (Block Diagram, CPE egress bus, page STN-2).

Regarding Claims 7 and 16, Wong discloses the packet duplication system and method, wherein: the contiguous range encoding includes a starting Virtual Local Area Network (VLAN) indicator (IPMC Replication, VLAN_ID1, step 9, page STN-13) and an ending VLAN indicator (IPMC Replication, VLAN_ID2, step 12, page STN-13).

Regarding Claims 8 and 17, Wong discloses the packet duplication system and method, wherein: the non-contiguous range encoding includes a most significant bit (MSB) portion (IPMC Replication, 64-bit vector for specifying the MS (Most Significant) 6 bits of VLAN_ID, page STN-11, lines 11-12) of a Virtual Local Area Network (VLAN) indicator (IPMC Replication, VLAN_ID, page STN-11) and a bitmap (ECMP Dest_Ip Search, step 7, LPM table get 12-bit L3_table_index with 3-bit count field, page STN-8) decoded from a least significant bit (LSB) portion (ECMP Dest_Ip Search, step 8, index points to the first entry of column of 8-

entries in the L3 table, page STN-8) of the VLAN indicator.

Regarding Claims 9 and 18, Wong discloses the packet duplication system and method, wherein: the discrete encoding includes a first Virtual Local Area Network (VLAN) indicator (IPMC Replication, VLAN_ID1, step 9, page STN-13) and a second VLAN indicator (IPMC Replication, VLAN_ID2, step 12, page STN-13).

Regarding Claims 10 and 19, Wong discloses the packet duplication system and method, wherein: the encoding format is configured to be selected in response to control bits (ECMP Dest_Ip Search, step 7, 12 bit with 3-bit field, page STN-8).

Regarding Claim 11, Wong discloses a method (IPMC Replication steps, page STN-13) of controlling a duplication of a multicast packet (Internet Protocol Multicast (IPMC) packet duplication covers tables required to implement the MMU and egress module, page 3, lines 2-4) containing at least multicast address data (multicast packet is replaced with source MAC address, page 3, lines 14-15), comprising:

receiving the packet (Block Diagram, CPI ingress bus, page STN-2);

performing a hashing function (IPMC Replication, MS_Vector, LS_Vector, 64-bit vector for specifying the MS and LS 6 bits of VLAN_ID and VLAN tag used as an index into the IP Replication table, pages STN-11 and STN-12, lines 1-12 and 7-8 respectively) on said multicast address data;

using the results of said hashing function as an index (ECMP Support, L3 interface index, page STN-7) for a linked-list table (ECMP Support, L3 table, page STN-7);

said linked-list table including a plurality of pointers (Head_Pointer and the Next_Pointer used as index to the LS table, step 5, STN-13);

accessing a first multicast descriptor pointer (ECMP Dest_Ip Search, LPM table 1st-searchkey=lpm_addr [14:0] = {11 'h0, ip0, step 3, page STN-8} in said linked-list table;

said multicast descriptor pointer pointing to multicast descriptors comprised of at least multicast Virtual Area Network (VLAN) pointers (ECMP Dest_Ip Seatch, step 10, VLAN_tag, page STN-8);

using at least one of said multicast VLAN pointers to access a multicast VLAN table (ECMP Dest_Ip Search, step 10, L3 Interface Table, page STN-8) comprised of a second pointers to VLAN pointer descriptors (ECMP Dest_Ip Search, Next-searchkey=lpm_addr [14:0] = {next_ pointer,lpn), step 5, page STN-8);

accessing a VLAN pointer descriptor (ECMP Dest_Ip Seatch, step 10, VLAN_tag, page STN-8) in response to the second pointer; and using information contained in said VLAN pointer descriptor to control applying an encoding (ECMP Dest_Ip Search, step 7, index points to the first entry of column of 8 entries in the L3 table, page STN-8) for the duplication of the packet.

Regarding claims 21 and 25 Wong discloses a multicast packet duplication system for multicast packets (Internet Protocol Multicast (IPMC) packet duplication covers tables required to implement the MMU and egress module, page 3, lines 2-4) containing at least multicast

address data (multicast packet is replaced with source MAC address, page 3, lines 14-15), comprising:

an input port (Block Diagram, CPI ingress bus, page STN-2) configured to receive a packet (IPMC packet, page 5, line 21); and

a plurality of output ports (Block Diagram, CPE egress bus, page STN-2) configured to output the packet; said output ports being coupled to one or more Virtual Local Area Networks (VLAN) (VLAN) (IPM packet replication per VLAN, page STN-10, line 8);

wherein said system applies a hashing function (IPMC Replication, MS_Vector, LS_Vector, 64-bit vector for specifying the MS and LS 6 bits of VLAN_ID and VLAN tag used as an index into the IP Replication table, pages STN-11 and STN-12, lines 1-12 and 7-8 respectively) to the multicast address data of said multicast packets; and

wherein said system uses the result of said hashing function as an index (ECMP Support, L3 interface index, page STN-7) to a linked- list table (ECMP Support, L3 table, page STN-7); said linked-list table having entries that comprise either multicast descriptors or pointers (Head_Pointer and the Next_Pointer used as index to the LS table, step 5, STN-13) to multicast descriptors;

said multicast descriptors being comprised of at least multicast VLAN descriptors or pointers (ECMP Dest_Ip Seatch, step 10, VLAN_tag, page STN-8) to multicast VLAN descriptors;

wherein the number of distributions of said multicast packet and the output port distribution of said multicast packet is controlled by information stored in either the multicast descriptors or multicast VLAN descriptors (ECMP Dest_Ip Search, Next-searchkey=lpm_addr[14:0] = {next_ pointer,lpn), step 5, page STN-8);

wherein said multicast VLAN descriptors contain a plurality of entries (column of 8 entries in the L3 table, ECMP Dest_Ip Search, step 7, page STN-8) each describing the multicast packet distribution to a different VLAN (VLANs, page 3, lines 6-7); and

wherein said VLAN descriptors include at least one of:

a contiguous range encoding (ECMP Dest_Ip Search, step 7, index points to the first entry of column of 8 entries in the L3 table, page STN-8) that includes a starting VLAN indicator (IPMC Replication, VLAN_ID2, step 9, page STN-13)and an ending VLAN indicator (IPMC Replication, VLAN_ID2, step 12, page STN-13); or

a non-contiguous range encoding that includes a most significant bit (MSB) portion of a VLAN indicator and a bitmap decoded from a least significant bit (LSB) portion of the VLAN indicator; or

a discrete encoding that includes a first VLAN indicator and a second VLAN indicator.

Regarding Claim 22, Wong discloses the packet duplication system of claim 21, wherein: said Virtual Local Area Network (VLAN) descriptors include at least one of:

a contiguous range encoding (ECMP Dest_Ip Search, step 7, index points to the first entry of column of 8 entries in the L3 table, page STN-8) that includes a starting VLAN indicator (IPMC Replication, VLAN_ID1, step 9, page STN-13) and an ending VLAN indicator (IPMC Replication, VLAN_ID2, step 12, page STN-13); or

a non-contiguous range encoding that includes a most significant bit (MSB) portion of a VLAN indicator and a bitmap decoded from a least significant bit (LSB) portion of the VLAN indicator; or

a discrete encoding that includes a first VLAN indicator and a second VLAN indicator.

Regarding Claim 23, Wong discloses the packet duplication system of claim 21, wherein said multicast descriptors also include a multicast packet time to live field (packet aging based on packet time stamp, page STN-49, line 16).

Regarding Claim 24, Wong discloses the packet duplication system of claim 21, wherein said multicast Virtual Local Area Network (VLAN) descriptors contain a plurality of entries (column of 8 entries in the L3 table, ECMP Dest_Ip Search, step 7, page STN-8) each describing the multicast packet distribution to a different VLAN (VLANs, page 3, lines 6-7).

Regarding Claim 26, Wong discloses a method (IPMC Replication steps, page STN-13) of controlling a duplication of one or more multicast packets (Internet Protocol Multicast (IPMC) packet duplication covers tables required to implement the MMU and egress module, page 3, lines 2-4) containing at least multicast address data (multicast packet is replaced with source MAC address, page 3, lines 14-15), comprising:
receiving (Block Diagram, CPI ingress bus, page STN-2) the multicast packet;
applying a hashing function (IPMC Replication, MS_Vector, LS_Vector, 64-bit vector for specifying the MS and LS 6 bits of VLAN_ID and VLAN tag used as an index into the IP Replication table, pages STN-11 and STN-12, lines 1-12 and 7-8 respectively) to the multicast address data of said multicast packets;

using the result of the hashing function as an index (ECMP Support, L3 interface index, page STN-7) to a linked-list table (ECMP Support, L3 table, page STN-7);

retrieving a multicast descriptor (Head_Pointer and the Next_Pointer used as index to the LS table, step 5, STN-13) from said linked-list table;

using said multicast descriptor to find the multicast packet time to live data (packet aging based on packet time stamp, page STN-49, line 16) and a Virtual Local Area Network (VLAN) descriptor (ECMP Dest_Ip Seatch, step 10, VLAN_tag, page STN-8)

obtaining information regarding how said multicast packets should be distributed to various output ports to at least one VLAN (VLANs, page 3, lines 6-7) from said VLAN descriptor; and

using this distribution information to distribute said multicast packets to said at least one VLAN (VLANs, page 3, lines 6-7).

Citation of Pertinent Prior Art

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dobbins et al. (Patent Number: 5,684,800) discloses method for establishing restricted broadcast groups in a switched network.

Jain et al. (Patent Number: US 6,614,787 B1) discloses system and method for efficiently handling multicast packets by aggregating VLAN context.

Williams (Patent No.: US 6,775,283 B1) discloses passing VLAN information through descriptors.

Kaniz et al. (Patent No.: US 6,963,566 B1) discloses multiple address lookup engines running in parallel in a switch for a packet-switched network.

Response to Arguments

3. Applicant's arguments filed October 31, 2007 have been fully considered, but they are not persuasive.

- In the remarks on pages 9 and 10 of the amendment, applicant contends that the cited prior art cannot be found in Wong's provisional application No.: 60/482,759. Further, Wong does not disclose hashing as shown in amended independent claims 1 and 11 and, dependent claims 10 and 13-19 thus inherit this limitation.
- The examiner respectfully disagrees and contends that Wong reveals the prior art and hashing in **Regarding Claim 1, Wong** discloses a multicast packet duplication system for multicast packets (Internet Protocol Multicast (IPMC) packet duplication covers tables required to implement the MMU and egress module, page 3, lines 2-4) containing at least multicast address data (multicast packet is replaced with source MAC address, page 3, lines 14-15), comprising:

  an input port (Block Diagram, CPI ingress bus, page STN-2) configured to receive a packet (IPMC packet, page 5, line 21); and

  a plurality of output ports (Block Diagram, CPE egress bus, page STN-2) configured to output the packet, wherein:

a number of duplications of the packet for each of the plurality of output ports is controlled by descriptors (IPMC Packet Replication, IPMC packet replication per VLAN at the egress done by two tables used for lookup, page STN-10, lines 1-8; IPMC Replication, Head_Pointer and the Next_Pointer used as index to the LS table, step 5, STN-13) arranged in a linked-list table indexed (ECMP Support, L3 table, page STN-7) by a hashing function (IPMC Replication, MS_Vector, LS_Vector, 64-bit vector for specifying the MS and LS 6 bits of VLAN_ID and VLAN tag used as an index into the IP Replication table, pages STN-11 and STN-12, lines 1-12 and 7-8 respectively) applied to said multicast address data.

Regarding Claims 2 and 14, Wong discloses the packet duplication system and method (IPMC Replication steps, page STN-13), wherein: each of the number of duplications is coupled to a Virtual Local Area Network (VLAN) (IPM packet replication per VLAN, page STN-10, line 8).

Regarding Claims 3 and 13, Wong discloses the packet duplication system and method, wherein: an encoding format (ECMP Dest_Ip Search, step 7, STN-8) of the descriptors includes at least one of:

a contiguous range encoding (ECMP Dest_Ip Search, step 7, index points to the first entry of column of 8 entries in the L3 table, page STN-8);

a non-contiguous range encoding; and

a discrete encoding.

Regarding Claims 4 and 15, Wong discloses the packet duplication system

and method, wherein: the descriptors arranged in the linked-list table include at least one shared descriptor (IPMC Replication, Head_Pointer and the Next_Pointer used as index to the LS table, step 5, STN-13).

Regarding Claim 5, Wong discloses the packet duplication system of claim 1, further comprising: a pointer table (ECMP Support, L3 Interface Table, page STN-7) having a width comprising a plurality of entries (column of 8 entries in the L3 table, ECMP Dest_Ip Search, step 7, page STN-8) coupled to the linked-list table.

Regarding Claim 6, Wong discloses the packet duplication system of claim 5, wherein: each of the plurality of entries (column of 8 entries in the L3 table, ECMP Dest_Ip Search, step 7, page STN-8) corresponds to one of the plurality of output ports (Block Diagram, CPE egress bus, page STN-2).

Regarding Claims 7 and 16, Wong discloses the packet duplication system and method, wherein: the contiguous range encoding includes a starting Virtual Local Area Network (VLAN) indicator (IPMC Replication, VLAN_ID1, step 9, page STN-13) and an ending VLAN indicator (IPMC Replication, VLAN_ID2, step 12, page STN-13).

Regarding Claims 8 and 17, Wong discloses the packet duplication system and method, wherein: the non-contiguous range encoding includes a most significant bit (MSB) portion (IPMC Replication, 64-bit vector for specifying the MS (Most Significant) 6 bits of VLAN_ID, page STN-11, lines 11-12) of

a Virtual Local Area Network (VLAN) indicator (IPMC Replication, VLAN_ID, page STN-11) and a bitmap (ECMP Dest_Ip Search, step 7, LPM table get 12-bit L3_table_index with 3-bit count field, page STN-8) decoded from a least significant bit (LSB) portion (ECMP Dest_Ip Search, step 8, index points to the first entry of column of 8-entries in the L3 table, page STN-8) of the VLAN indicator.

Regarding Claims 9 and 18, Wong discloses the packet duplication system and method, wherein: the discrete encoding includes a first Virtual Local Area Network (VLAN) indicator (IPMC Replication, VLAN_ID1, step 9, page STN-13) and a second VLAN indicator (IPMC Replication, VLAN_ID2, step 12, page STN-13).

Regarding Claims 10 and 19, Wong discloses the packet duplication system and method, wherein: the encoding format is configured to be selected in response to control bits (ECMP Dest_Ip Search, step 7, 12 bit with 3-bit field, page STN-8).

Regarding Claim 11, Wong discloses a method (IPMC Replication steps, page STN-13) of controlling a duplication of a multicast packet (Internet Protocol Multicast (IPMC) packet duplication covers tables required to implement the MMU and egress module, page 3, lines 2-4) containing at least multicast address data (multicast packet is replaced with source MAC address, page 3, lines 14-15), comprising:

receiving the packet (Block Diagram, CPI ingress bus, page STN-2);

performing a hashing function (IPMC Replication, MS_Vector, LS_Vector, 64-bit vector for specifying the MS and LS 6 bits of VLAN_ID and VLAN tag used as an index into the IP Replication table, pages STN-11 and STN-12, lines 1-12 and 7-8 respectively) on said multicast address data;

using the results of said hashing function as an index (ECMP Support, L3 interface index, page STN-7) for a linked-list table (ECMP Support, L3 table, page STN-7);

said linked-list table including a plurality of pointers (Head_Pointer and the Next_Pointer used as index to the LS table, step 5, STN-13);

accessing a first multicast descriptor pointer (ECMP Dest_Ip Search, LPM table 1st-searchkey=lpm_addr [14:0] = {11 'h0, ip0, step 3, page STN-8} in said linked-list table;

said multicast descriptor pointer pointing to multicast descriptors comprised of at least multicast Virtual Area Network (VLAN) pointers (ECMP Dest_Ip Seatch, step 10, VLAN_tag, page STN-8);

using at least one of said multicast VLAN pointers to access a multicast VLAN table (ECMP Dest_Ip Search, step 10, L3 Interface Table, page STN-8) comprised of a second pointers to VLAN pointer descriptors (ECMP Dest_Ip Search, Next-searchkey=lpm_addr[14:0] = {next_ pointer,lpn), step 5, page STN-8);

accessing a VLAN pointer descriptor (ECMP Dest_Ip Seatch, step 10, VLAN_tag, page STN-8) in response to the second pointer; and using

information contained in said VLAN pointer descriptor to control applying an encoding (ECMP Dest_Ip Search, step 7, index points to the first entry of column of 8 entries in the L3 table, page STN-8) for the duplication of the packet.

Regarding claims 21 and 25 Wong discloses a multicast packet duplication system for multicast packets (Internet Protocol Multicast (IPMC) packet duplication covers tables required to implement the MMU and egress module, page 3, lines 2-4) containing at least multicast address data (multicast packet is replaced with source MAC address, page 3, lines 14-15), comprising:

an input port (Block Diagram, CPI ingress bus, page STN-2) configured to receive a packet (IPMC packet, page 5, line 21); and

a plurality of output ports (Block Diagram, CPE egress bus, page STN-2) configured to output the packet; said output ports being coupled to one or more Virtual Local Area Networks (VLAN) (VLAN) (IPM packet replication per VLAN, page STN-10, line 8);

wherein said system applies a hashing function (IPMC Replication, MS_Vector, LS_Vector, 64-bit vector for specifying the MS and LS 6 bits of VLAN_ID and VLAN tag used as an index into the IP Replication table, pages STN-11 and STN-12, lines 1-12 and 7-8 respectively) to the multicast address data of said multicast packets; and

wherein said system uses the result of said hashing function as an index (ECMP Support, L3 interface index, page STN-7) to a linked- list table

(ECMP Support, L3 table, page STN-7); said linked-list table having entries that comprise either multicast descriptors or pointers (Head_Pointer and the Next_Pointer used as index to the LS table, step 5, STN-13) to multicast descriptors;

said multicast descriptors being comprised of at least multicast VLAN descriptors or pointers (ECMP Dest_Ip Seatch, step 10, VLAN_tag, page STN-8) to multicast VLAN descriptors;

wherein the number of distributions of said multicast packet and the output port distribution of said multicast packet is controlled by information stored in either the multicast descriptors or multicast VLAN descriptors (ECMP Dest_Ip Search, Next-searchkey=lpm_addr[14:0] = {next_ pointer,lpn), step 5, page STN-8);

wherein said multicast VLAN descriptors contain a plurality of entries (column of 8 entries in the L3 table, ECMP Dest_Ip Search, step 7, page STN-8) each describing the multicast packet distribution to a different VLAN (VLANs, page 3, lines 6-7); and

wherein said VLAN descriptors include at least one of:

a contiguous range encoding (ECMP Dest_Ip Search, step 7, index points to the first entry of column of 8 entries in the L3 table, page STN-8) that includes a starting VLAN indicator (IPMC Replication, VLAN_ID2, step 9, page STN-13)and an ending VLAN indicator (IPMC Replication, VLAN_ID2, step 12, page STN-13); or

a non-contiguous range encoding that includes a most significant bit (MSB) portion of a VLAN indicator and a bitmap decoded from a least significant bit (LSB) portion of the VLAN indicator; or

a discrete encoding that includes a first VLAN indicator and a second VLAN indicator.

Regarding Claim 22, Wong discloses the packet duplication system of claim 21, wherein: said Virtual Local Area Network (VLAN) descriptors include at least one of:

a contiguous range encoding (ECMP Dest_Ip Search, step 7, index points to the first entry of column of 8 entries in the L3 table, page STN-8) that includes a starting VLAN indicator (IPMC Replication, VLAN_ID1, step 9, page STN-13) and an ending VLAN indicator (IPMC Replication, VLAN_ID2, step 12, page STN-13); or

a non-contiguous range encoding that includes a most significant bit (MSB) portion of a VLAN indicator and a bitmap decoded from a least significant bit (LSB) portion of the VLAN indicator; or

a discrete encoding that includes a first VLAN indicator and a second VLAN indicator.

Regarding Claim 23, Wong discloses the packet duplication system of claim 21, wherein said multicast descriptors also include a multicast packet time to live field (packet aging based on packet time stamp, page STN-49, line 16).

Regarding Claim 24, Wong discloses the packet duplication system of claim 21, wherein said multicast Virtual Local Area Network (VLAN) descriptors contain a plurality of entries (column of 8 entries in the L3 table, ECMP Dest_Ip Search, step 7, page STN-8) each describing the multicast packet distribution to a different VLAN (VLANs, page 3, lines 6-7).

Regarding Claim 26, Wong discloses a method (IPMC Replication steps, page STN-13) of controlling a duplication of one or more multicast packets (Internet Protocol Multicast (IPMC) packet duplication covers tables required to implement the MMU and egress module, page 3, lines 2-4) containing at least multicast address data (multicast packet is replaced with source MAC address, page 3, lines 14-15), comprising:

receiving (Block Diagram, CPI ingress bus, page STN-2) the multicast packet;

applying a hashing function (IPMC Replication, MS_Vector, LS_Vector, 64-bit vector for specifying the MS and LS 6 bits of VLAN_ID and VLAN tag used as an index into the IP Replication table, pages STN-11 and STN-12, lines 1-12 and 7-8 respectively) to the multicast address data of said multicast packets;

using the result of the hashing function as an index (ECMP Support, L3 interface index, page STN-7) to a linked-list table (ECMP Support, L3 table, page STN-7);

retrieving a multicast descriptor (Head_Pointer and the Next_Pointer used as index to the LS table, step 5, STN-13) from said linked-list table;

using said multicast descriptor to find the multicast packet time to live data (packet aging based on packet time stamp, page STN-49, line 16) and a Virtual Local Area Network (VLAN) descriptor (ECMP Dest_Ip Seatch, step 10, VLAN_tag, page STN-8)

obtaining information regarding how said multicast packets should be distributed to various output ports to at least one VLAN (VLANs, page 3, lines 6-7) from said VLAN descriptor; and

using this distribution information to distribute said multicast packets to said at least one VLAN (VLANs, page 3, lines 6-7). Further, Wong does disclose hashing as in IPMC Replication, MS_Vector, LS_Vector, 64-bit vector for specifying the MS and LS 6 bits of VLAN_ID and VLAN tag used as an index into the IP Replication table, pages STN-11 and STN-12, lines 1-12 and 7-8 respectively).

- In the remarks on page 11 of the amendment, applicant contends that all the claims are allowable and requests a notice of allowance for the application.
- The examiner respectfully disagrees and contends that in light of the prosecution of claims 1-11, 13-19 and 21-26, the claims are not allowable.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Andrews whose telephone number is (571) 270-1801. The examiner can normally be reached on Monday through Friday 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rao S. Seema can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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June 15, 2007